Delta Information
Release Notes
SAP Convergent Charging (SAP CC 3.0)

Target Audience

- Technology Consultants
- Solution Consultants

PUBLIC
Document version: 1.0 – November, 2011

THE BEST-RUN BUSINESSES RUN SAP

Document History

CAUTION

Before you start the implementation or your operations, make sure you have the latest version of this document. You can find the latest version from SAP Service Marketplace at: https://service.sap.com/releasenotes → *SAP Solutions* → *SAP Convergent Charging*.

The following table provides an overview of the most important document changes.

Version	Date	Description
1.0	November, 2011	Initial version

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1 Introduction

Target Audience

- Technology consultants
- Solution consultants

About this Document

The Release Notes document lists the technical and functional differences between SAP Convergent Charging software version 2.0 and version 3.0.

SAP Convergent Charging software is referred to as SAP CC in this document.

The Release Notes document contains the following main sections:

- *Consume To Cash In High Volume Business*

  Delta information about the C2C scenario and the end-to-end scenario C2O

- *Business Features*

  Delta information about master data and charging process

- *Architecture*

  Delta information about changed architecture concepts

- *Integration*

  Delta information about integration of SAP CC

- *Technical Interfaces*

  Delta information about communication and other technical interfaces

- *Technical Features*

  Delta information about the security, tax management and platforms

- *Documentation*

  Delta information about document types and deliverables

- *Installation and Upgrade*

  Delta information about installation and upgrade tools, procedures and framework

Document Abbreviations

The table below shows the list of abbreviations used throughout this document.

Abbreviation	Meaning
BIT	Billable Item (SAP Convergent Invoicing)
CC	SAP Convergent Charging
CDR	Consumption Detail Record (CC BART Sever)
CI	SAP Convergent Invoicing (SAP ERP System)
CIF	Charged item Integration Framework

CIT	Charged Item
COL	Common Object Layer Framework (SAP ERP System)
CT	Communications Taxing (Server)
EIF	Exportable item Integration Framework
SMD	Solution Manager Diagnostic
TIF	Transaction Integration Framework
WSDL	Web Services Description Language
XML	eXtended Markup Language
XSD	XML Schema Definition

2 Before You Start

Release Notes

A release note typically describes a new function or an existing function that has been enhanced or changed. It may, however, also describe a function that has been deleted or describe user interface changes, terminology changes.

Before you start the implementation or the upgrade, make sure you have the latest version of this document. You can find the latest version at the following locations: https://service.sap.com/releasenotes → *SAP Solutions* → *SAP Convergent Charging* and https://service.sap.com/releasenotes → *SAP Industry Specific Components* → *SAP for Telecommunications*.

Installation & Upgrade Information

For a complete list of the available installation and upgrade documents for this software release, see Service Marketplace at the following location: https://service.sap.com/instguidescc30.

Other Information Centers of SAP CC 3.0 are available from SAP Service Marketplace at: https://service.sap.com/instguidescc or https://service.sap.com/instguides → *SAP Business Suite Applications* → *SAP Convergent Charging*.

Important Note

There is no SAP Library for SAP CC 3.0. As solution or technology consultants, consult first the Technical Reference Guide. You can find the latest version at the following location: https://service.sap.com/instguidescc30 → *Plan*.

Additional Information

For more information about specific topics, see the quick links as shown in the table below.

Content	Quick Link on SAP Service Marketplace
SAP Convergent Charging	SAP CC 3.0 Information Center: https://service.sap.com/instguidescc The Information Centers of SAP CC 3.0 are available from Service Marketplace: https://service.sap.com/instguides → *SAP Business Suite Applications* → *SAP Convergent Charging*
Security Notes	https://service.sap.com/securitynotes
Security	https://service.sap.com/security
Security Guides	https://service.sap.com/securityguide
SAP Notes	https://service.sap.com/notes
Released Platforms	https://service.sap.com/platforms

SAP Solution Manager	https://service.sap.com/solutionmanager
Installation & Upgrade Documentation	https://service.sap.com/instguides

3 Consume-To-Cash In High Volume

Convergent Charging

Using Convergent Charging you can charge:

- Customers for telecommunication services and other services
- Different types of customers (individual, families, companies, and so on) using any form or combination of payment methods such as prepaid, postpaid, or hybrid

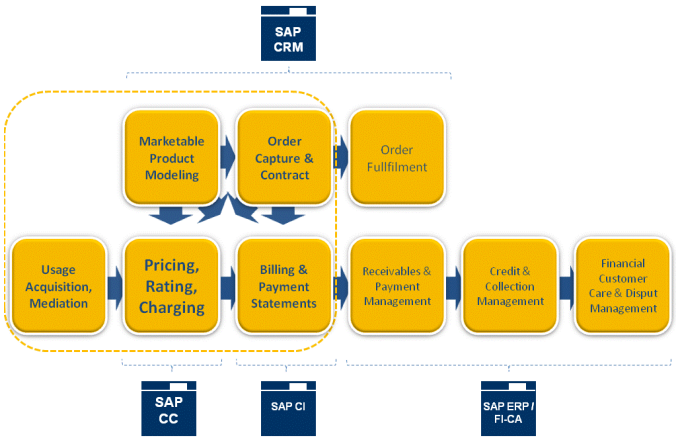
Convergent Charging runs on a single system with a single customer base and uses a single set of processes, interfaces, and operational procedures. With low TCO, this SAP CC system enables you to manage all your customers and services.

Convergent Charging provides real-time credit control for prepaid accounts so that you can:

- Control services and manage prepaid balances in real time by checking balances before delivering services to the customer
- Notify the customer when a balance threshold is reached
- Terminate the service session when the balance is depleted

Convergent Charging also provides refill management functions that enable your customers to credit their prepaid accounts manually or automatically.

Convergent Charging does not manage customer postpaid accounts internally but enables you to refer to external postpaid accounts stored in a billing system. At the time of charging, Convergent Charging generates data items, and then forwards them to SAP ERP, where the customer invoice is created.



Integrated Components

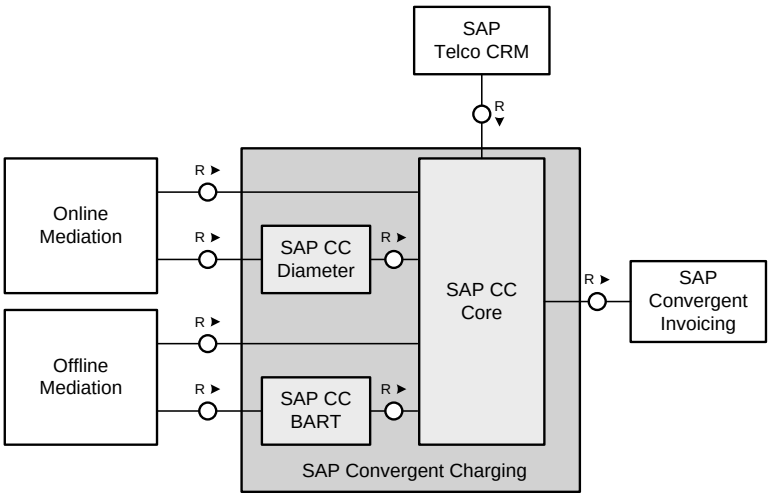
SAP Convergent Charging 3.03.0 is integrated with SAP CRM and SAP ERP/FI-CA components of the SAP Business Suite EhP6.

SAP CC features the new functions:

- First integration with SAP CRM for the modeling of commercial products and for the sales order function
  - Billing product catalog enhancements

- New data model for master data (service provider level and customer level) / expose Billing Platform via APIs

- Enhanced integration with SAP ERP/FI-CA
  - Prepaid support
  - Postpaid offline rerating



Integration with SAP CRM (New)

SAP Convergent Charging 3.0 handles the design of pricing elements that can be combined in a commercial product in SAP CRM.

SAP CRM manages the distributions of master data (creation and maintenance).

Interfaces
Integration between SAP CRM and SAP CC is done using operations of the web services provided by SAP CC Core Server. SAP CRM acts as consumer of this web services. For each service a generated consumer proxy is already delivered within SAP CRM. Details of communication as destination server, transport protocol, access credentials have to be set up according to the concrete system landscape. This setup is done using transaction SOAMANAGER. Refer to the SOAMANAGER documentation for more details about logical ports.

NOTE
For more information, see the *Configuration Guide for SAP CRM 7.0 Enhancement Package 2 (for the Telecommunications business scenario Sales and Order Management)*.

Integration with SAP ERP and SAP CI (Enhanced)

SAP Convergent Charging handles the rating (pricing) and charging (determination of invoice recipient) of services. As a result billable items are created that you transfer to *Billing in Contract Accounts Receivable and Payable* and that – for example in the case of rerating – you can also reverse.

SAP Convergent Invoicing subsequently groups the priced services into invoices that you send to customers and posts the invoice amounts in *Contract Accounts Receivable and Payable* (FI-CA).

When SAP Convergent Invoicing has to trigger the invoices computation for a given billing cycle, it first forces the launch of some processes in SAP Convergent Charging for the related provider contracts:

- the activation process
- the mass load of resulting billable items

NOTES

- For more information about how to adopt billable items from SAP Convergent Charging and to process them in *Billing in Contract Accounts Receivable and Payable*, see the SAP Library for SAP ERP Enhancement Packages. Consult the SAP Help Portal at: http://help.sap.com → *SAP ERP* → *Central Component* → *Enhancement Packages* → *Industries in SAP ERP* → *SAP Telecommunications* → *Billing in Contract Accounts Receivable and Payable* → *Integration with SAP Convergent Charging*.
- In *Customizing* under *Integration* → *Convergent Charging* → *Display Interfaces to SAP CC*, you can get an overview of the interfaces between Contract Accounts Receivable and Payable (FI-CA) and SAP Convergent Charging.

Interfaces
SAP Convergent Charging uses the Application Programming Interfaces (APIs) as RFC function modules and provided by *Billing in Contract Accounts Receivable and Payable*.

Master Data

In this integrated scenario, SAP Convergent Charging 3.0 is used with the new data model introduced in these notes and that mainly includes:

- Service Provider Level:
  - Charge plans with charges
  - Refill plans with the refill logic
  - Price table (*) and mapping tables
- Customer Level:
  - Provider contracts

For more information about the combinations and the assignments of charge plans and refill plans in SAP CRM, see the *Cross Catalog Mapping* section from the *Configuration Guide for SAP CRM 7.0 Enhancement Package 2 (for the Telecommunications business scenario Sales and Order Management)*.

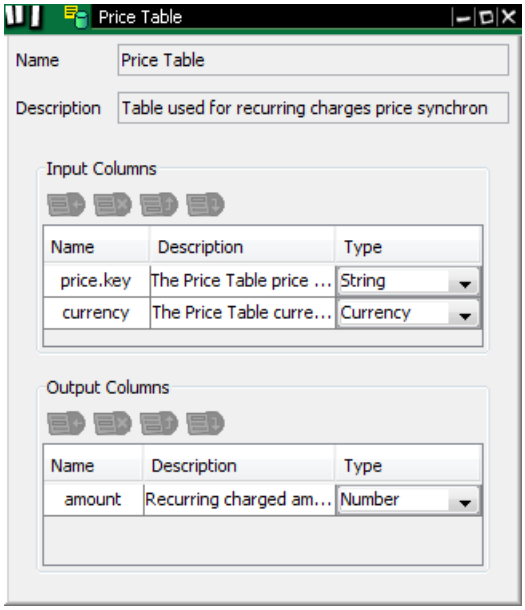
NOTES (*)

- In an integrated scenario with SAP CRM of SAP Business Suite, a particular mapping table class (named price table) and a specific management of mapping tables is implemented in the landscape when recurring fees are managed.

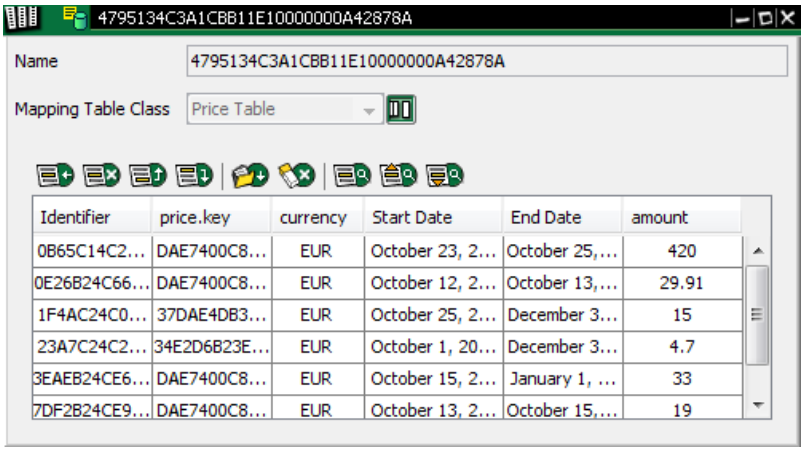
- For more information, see the *Integration of Recurring Charges with SAP CC* section from the *Configuration Guide for SAP CRM 7.0 Enhancement Package 2 (for the Telecommunications business scenario Sales and Order Management)*.

Particular Data: Price Table

In this integrated scenario, SAP Convergent Charging 3.0 includes a predefined mapping table class with a particular schema. This object is used for the synchronization of recurring prices stored in the SAP CRM.



Based on this class, the SAP CRM creates and maintains a mapping table in SAP CC for each product in order to define uniquely a price within a product.



For more information about the configurations and recommendations for this integrated scenario with the SAP CRM, see the *Configuration Guide for SAP CC 3.0* from SAP Service Marketplace at: https://service.sap.com/instguidescc → *SAP CC 3.0* → *Install* → *Configuration Guide*.

Distribution and Replication of Master Data

Distribution

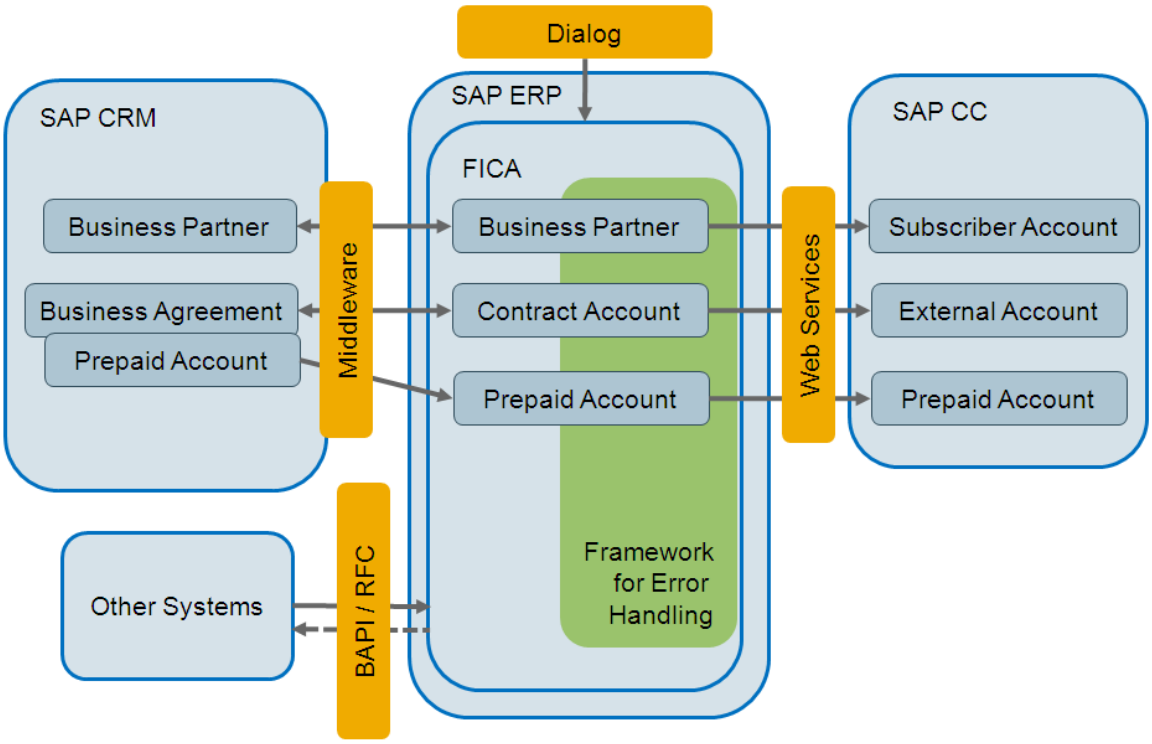
In an integrated landscape, the SAP CRM System is responsible for the distribution of the master data between the components (SAP CRM, SAP ERP, SAP CC).

Replication

The SAP ERP System is responsible for the replication and synchronization mechanisms of the master data to the relevant modules or components:

- FI-CA of SAP ERP
- SAP CC

The SAP ERP System provides a dedicated infrastructure based on a Common Object Layer Framework (COL). This framework is used by the SAP CRM System to initiate the distributions of the relevant master data to SAP CC and to FI-CA (in SAP ERP) and to SAP Convergent Invoicing (in SAP ERP).



NOTES

- For more information about these mechanisms, see the *Prepaid Account* section from the *Configuration Guide for SAP CRM 7.0 EhP2* available for the *SAP for Telecommunications* business scenario *Sales and Order Management*.
- For more information about the COL Framework, see the configuration guide *Common Object Layer for SAP Business Suite*.

This documentation can be found in SAP Solution Manager and from SAP Service Marketplace at: https://implementationcontent.sap.com/bpr → *Solutions/Applications* → *SAP For Telecommunications* → *Sales and Order Management in Call Center*.

Distribution of Price Data

The SAP CRM distributes the prices for the products to SAP CC by creating and maintaining mapping tables.

NOTE

For more information about replication, see the *Integration of Recurring Charges with SAP CC* section from the *Configuration Guide for SAP CRM 7.0 Enhancement Package 2* available for the *SAP for Telecommunications* business scenario *Sales and Order Management*.

Distribution of Business Partner and Business Agreement Data

Prepaid accounts are created in SAP CRM with the business agreements and are replicated.

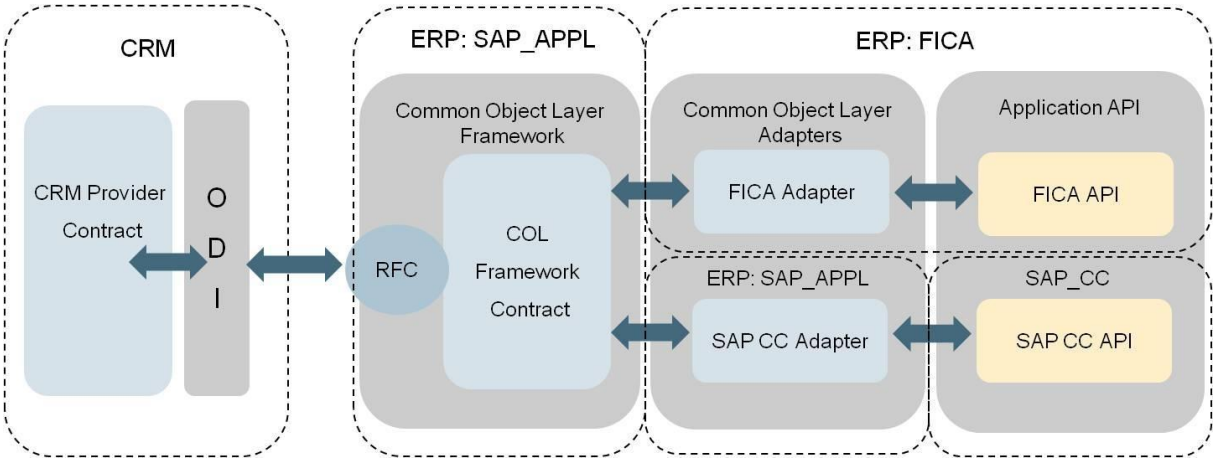
SAP CRM	SAP ERP	SAP CC
Business Partner	Business Partner	Subscriber Account
Business Agreement	Contract Account	External (Postpaid) Account
Prepaid Account	Prepaid Account	Prepaid Account

NOTE

For more information, see the *Prepaid Account* section from the *Configuration Guide for SAP CRM 7.0 Enhancement Package 2* available for the *SAP for Telecommunications* business scenario *Sales and Order Management*.

Distribution of Provider Contract Data

A set of Customizing settings is provided with the implementation of the Order Distribution Infrastructure (ODI) step types for the distribution to SAP ERP and SAP CC. You can use these to set up a typical scenario when you implement the distribution of contracts in a system landscape with SAP Convergent Charging for rating/charging and an SAP Convergent Invoicing for billing/invoicing in FICA.



NOTE

For more information, see the *Distribution of Contract Data to SAP ERP using ODI* section from the *Configuration Guide for SAP CRM 7.0 Enhancement Package 2* available for the *SAP for Telecommunications* business scenario *Sales and Order Management*.

Integrated Functions

Account Balance Management Alert Notifications

Some notifications are sent to and used by the SAP CRM and SAP ERP systems for:

- Amount of the balance of a prepaid account below a threshold
- Expiration of a prepaid account

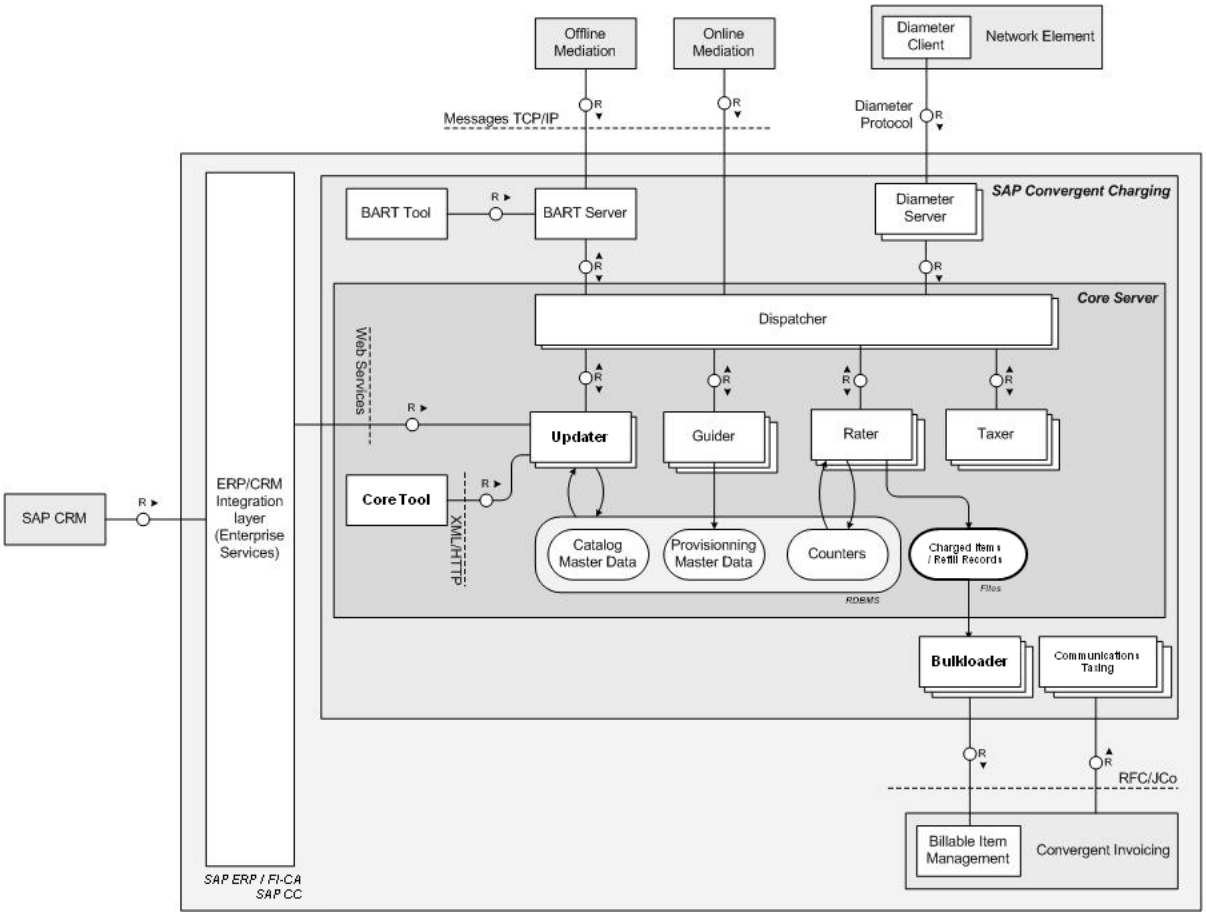
SAP CRM

When the prepaid balance reaches one of the given limits, SAP Convergent Charging contacts the SAP CRM System (function module CRM_ISX_PPACC_ALERT_HANDLER). Within this function module the BAdI CRM_ISX_PRP_NOTIFICATION_MSG is used to enrich the data and send the prepared message to a message service (SMS, Mail, …).

NOTE

For more information, see the *Limit Alerts* section from the *Prepaid Account* chapter in the *Configuration Guide for SAP CRM 7.0 Enhancement Package 2 (for the Telecommunications business scenario Sales and Order Management)*.

Integrated Architecture



Bulkoader Instances of the Core Server (Enhanced)

Use

In SAP Convergent Charging 3.0, the Bulkoader instances of the Core Server have been enhanced with the following functions:

- The Bulkoader instances are a responsible for the conversion of the refill records into billable items (BIT) and for the post to SAP Convergent Invoicing in the SAP ERP/FI-CA system.
- The Bulkloader instances can read charged Items and refill record from files to create Billable Items of type Prepaid Consumption or Prepaid Refill.
- The Bulkoader instances transmit the notification alerts to the SAP CRM and SAP ERP systems by using JCo.

4 Business Features

Data Model Changes for Master Data

Service Provider Master Data (New)

The catalog of a service provider can include the following new master data:

- Charge Plan
- Refill Item Class
- Refill Logic
- Refill Plan
- Mapping Table
- Mapping Table Class

Note that the following objects have been enhanced to support this new data:

- Chargeable Item Package, Chargeable Item Class
- Charges

Customer Master Data (New)

- Provider Contract (Technical name: Charging Contract)

Note that the following object has been enhanced to support this new data:

- Subscriber Account

Core Functions (Enhanced)

The key functions of SAP Convergent Charging 3.0 support the new data model:

- Rating Process
- Charging Process
- Refilling Process (New)
- Rerating Process

Master Data for the Service Provider

Charge Plan (New)

Use

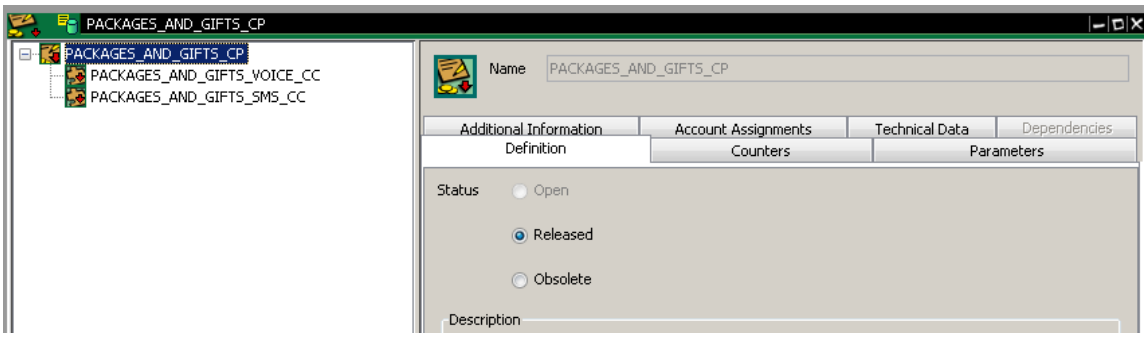
The charge plans are commercial building blocks to be combined in a CRM application (see the `Charge Plan Class` in the Integration section, page [33]). It is configured in the catalog of the service provider. A charge plan includes customized charges with:

- Counters and parameters may be redefined or linked
- Account references are linked to charge plan level account assignments

- User technical Identifiers are linked to charge plan level identifiers
- Configurations for the generation of result data (charged items)
- Tax Information
  - Base amount (Net, Gross) depending on Price Plan configuration
- Tier Tables, Translation Tables cannot be redefined

The charge plans have a simplified flat structure (no charge plan within a charge plan).

The lifecycle management is possible for different periods of time with revisions and associated status (open, released, and obsolete).



Charge Plan in the Core Tool

For more information, see the SAP Help Portal at: http://help.sap.com/cc → *SAP CC 3.0* → *Core Tool* → *Charge Plans*.

Charge (Enhanced)

Use

SAP Convergent Charging 3.0 provides enhanced charges that can support new and old data models.

For more information, see the SAP Help Portal at: http://help.sap.com/cc → *SAP CC 3.0* → *Core Tool* → *Charges*.

Refill Plan (New)

Use

SAP Convergent Charging 3.0 provides a new structured object to configure the refill management function at the service provider's catalog level. It must be combined with charge plans in a CRM application to model new commercial products and offers.

A refill plan includes the customized refill logic with:

- Counters and parameters may be redefined or linked
- Prepaid account reference is linked to refill plan level account assignment
- User technical Identifiers are linked to refill plan level identifiers
- Configurations for the generation of the result data (refill records)
- Tier Tables, Translation Tables cannot be redefined

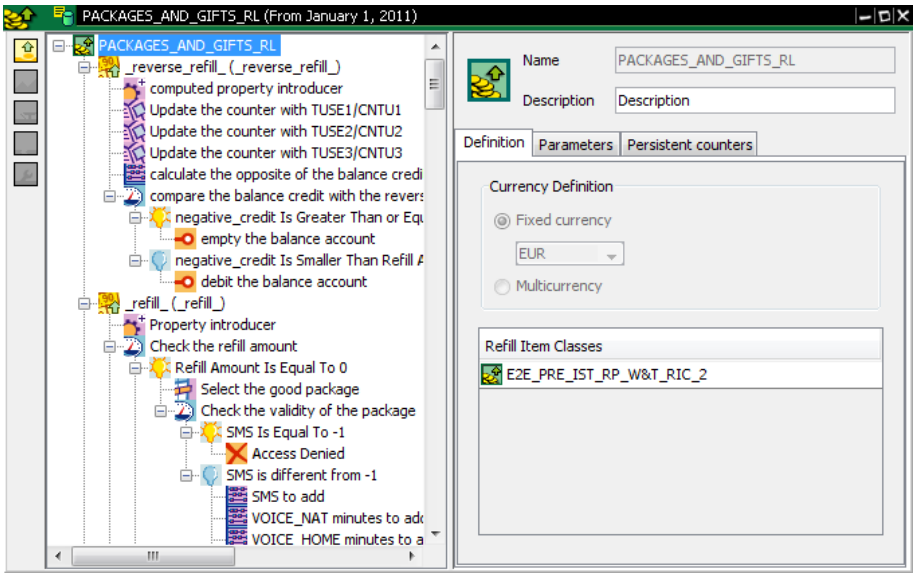
The lifecycle management is possible for different periods of time with revisions and associated status (open, released, and obsolete).

For more information, see the SAP Help Portal at: http://help.sap.com/cc → *SAP CC 3.0* → *Core Tool* → *Refill Plans*.

Refill Logic (New)

Use

SAP Convergent Charging 3.0 provides a new structured object to configure the calculation algorithms for refills.



Refill Logic in the Core Tool

For more information, see the SAP Help Portal at: http://help.sap.com/cc → *SAP CC 3.0* → *Core Tool* → *Refill Logic*.

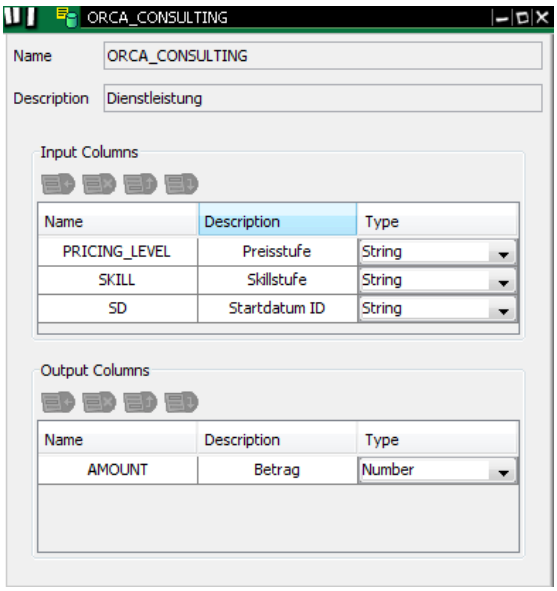
Mapping Table and Mapping Table Class (New)

Use

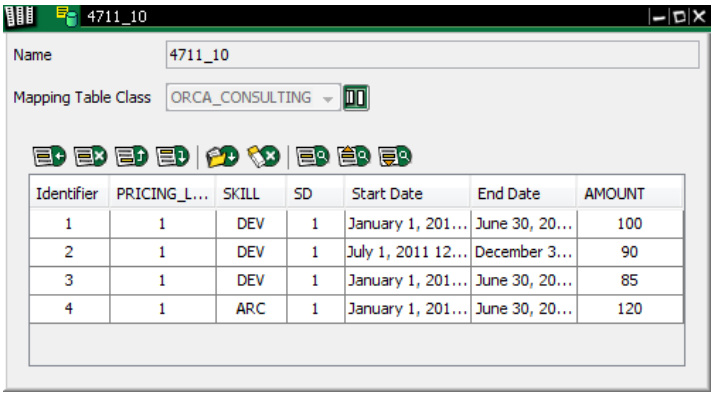
SAP Convergent Charging 3.0 provides two new objects to replace the translation tables:

- Mapping Table Class
  - Defines a table structure or signature
- Mapping Table
  - Represents an instance of a Mapping Table Class
  - Includes the table data

Note: In an integrated scenario with SAP CRM and SAP ERP/FI-CA components of the SAP Business Suite, a particular and mandatory mapping table class is provided by default to model recurring fees. It is named Price Table.



Mapping Table Class



Mapping Table

For more information, see the SAP Help Portal at: http://help.sap.com/cc → *SAP CC 3.0* → *Core Tool* → *Mapping Tables*.

Master Data for the Customers

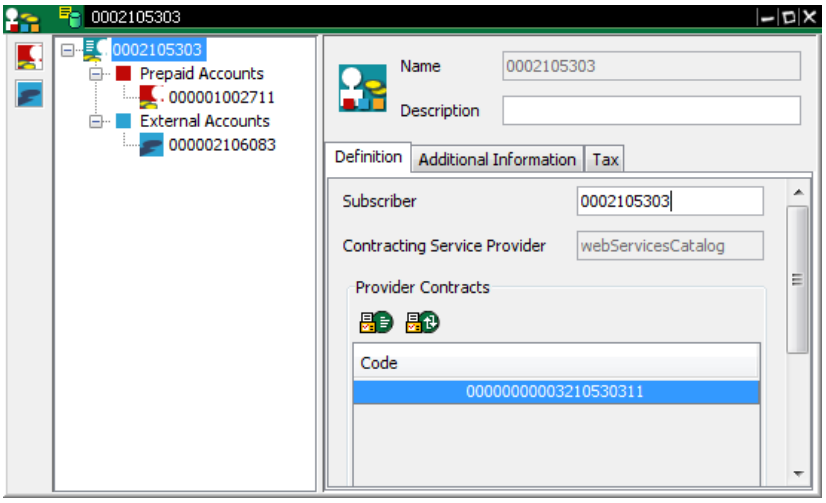
Subscriber Account (Enhanced)

Use

SAP Convergent Charging 3.0 provides enhanced subscriber accounts that are compliant with the new data model (charge/refill plan and provider contract):

- For old data model:
  - Default Account is no longer mandatory

- For new data model
  - Default account is not available via Web Services
  - Credit limit is not available
  - Additional Tax Information: Customer Country Code, Business Category (B2B, B2C)
  - Prepaid account: Overrun is not available
  - External postpaid account: Type not available (always undefined)



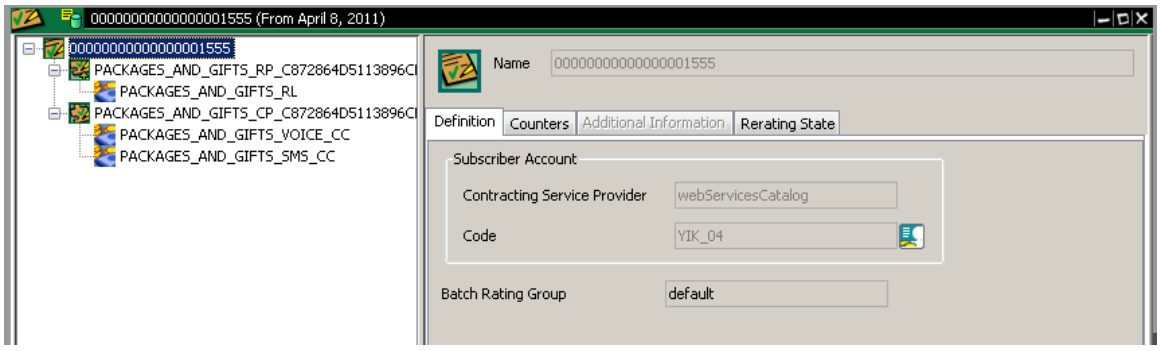
Subscriber Account in the Core Tool

Provider Contract (New)

Use

SAP Convergent Charging 3.0 provides a new structured object to replace the subscriptions. A provider contract is a simplified flat structure that:

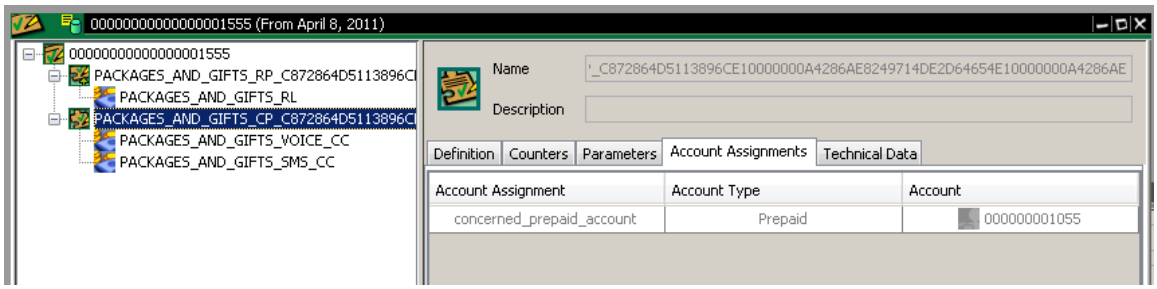
- Is a long-term agreement between a service provider and its customer
- Includes contract items based on activated charge plans and an activated refill plan
- Includes counters shared by the charges and the refill logic included in the contract



Provider Contract in the Core Tool

A contract item:

- Refers to a charge plan owned by the service provider
- Includes counters and charge activations based on charges customized in the activated plan



Contract Item

SAP Convergent Charging 3.0 handles the changes of this object (structure, content) for different periods of time.

Note: In an integrated scenario with SAP CRM and SAP ERP/FI-CA components of the SAP Business Suite, the provider contract is a master data shared between all the components. SAP Convergent Charging handles the charging view of a Provider Contract.

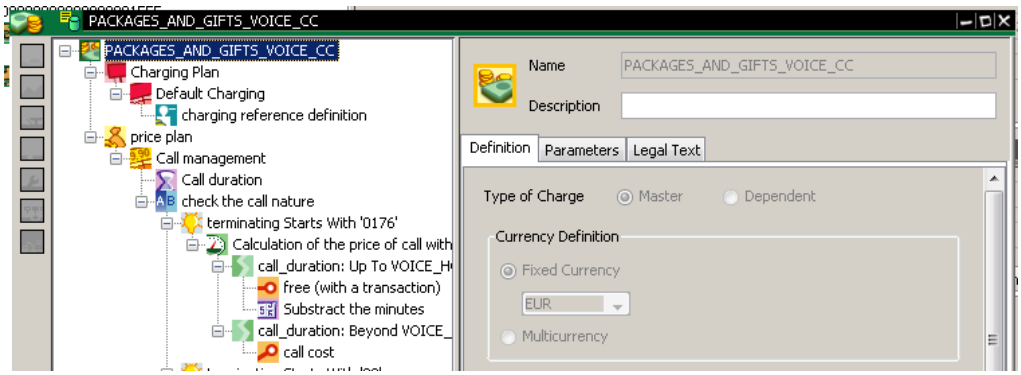
Integration
The technical name is Charging Contract and is available at the technical interface level (see Web Services).

Currency Management

Multicurrency Support (New)

Use
You can use multicurrency to model the master data:

- New data model
  - In basic charge
  - In customized Charge in a Charge Plan



The rating and refilling functions support this feature and the changed master data:

- Contract Item in Provider Contracts

SAP Currency Support (New)

SAP Convergent Charging 3.0 supports the SAP Currencies defined in the SAP ERP System.

Refilling Function

Refilling (New)

Use

You use this business process to refill the prepaid accounts for your customers. Also known as a top-up process in the telecommunications sector, this process credits the prepaid account for a customer. A credit is usually a monetary amount but can also include a quantity of services, such as 100 SMS, 20 MB of data, for example. The customer can use the credit to purchase goods or services (see the process Processing Charging).

This business process refills a prepaid account:

- Manually: The end customer refills his prepaid account directly by using different points of services (ATM, call center, or website) to transfer a credit from a refill card, a bank account, or a prepaid account to their prepaid account.
- Automatically: The system triggers the refills automatically for the customer. The system can trigger a refill either periodically or when the prepaid account balance goes below a threshold defined by the customer.

When a customer requests a manual refill, the application that manages it (for example, a Voucher Management System) sends a refill item to the system. To define the refill, the refill item includes some properties, such as its origin (point of service) or associated gifts. After processing the refill item, the system generates a refill record.

The system triggers automatic refills internally and also generates some refill records.

Prerequisites

To use this business process, you first need to enter master data such as:

- Refill plans combined in a CRM application
- Subscriber account with a prepaid account
- Provider contract that refers to both a refill plan and a prepaid account

Refill plans can be created from the user interface for the system. Subscriber accounts, prepaid accounts, and provider contracts are created from a CRM application such as SAP CRM.

Process

The following business process runs in SAP CC as follows:

- Receive a refill item - The system receives a refill item through APIs. This refill item refers to a prepaid account that is known to the system.
- Guide the refill item - The system retrieves the unique refill plan activated in a provider contract for the customer and that refers to the prepaid account to be refilled.
- Execute the refill logic - The system executes the refill plan logic, computes the credit to add to the prepaid account, and updates the prepaid balance and the counters of the related services accordingly.
- Generate refill records - The system generates refill records and stores them in files. Refill records are configurable and can include:
  - Refill plan characteristics (for example, the identifier of the refill plan executed)
  - Provider contract data
  - Origin of the refill (for example, one-time, periodic, or voucher)
  - Properties of the refill item
  - Computed properties (for example, the added credit per service)
  - Prepaid account information (for example, the balance or the state of the prepaid account)

Result

This business process uses a prepaid channel to generate the refill record files. These files can be converted and loaded in SAP Convergent Invoicing.

Integration by Default (New)

The refilling function is integrated with SAP ERP/FI-CA for *Convergent Invoicing*. Consult the first chapter about the value scenario Consume-To-Cash In High Volume in this document, page [12].

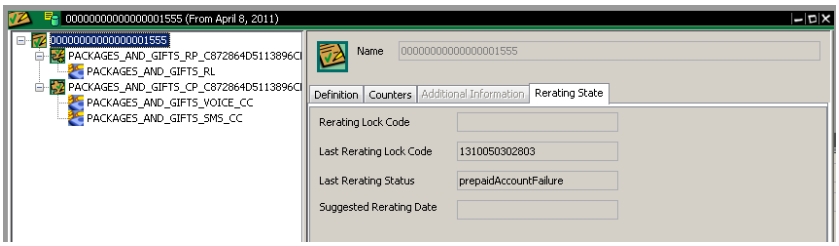
If you plan to implement this function for another scenario, consult the Integration chapter, page [33].

Session-based Rating and Charging Function

High Availability (Enhanced)

The session-based rating and charging function is enhanced to improve the high availability of the convergent charging services of SAP CC Core Server. Consult the Architecture chapter, page [31].

Rerating Function



Rerating Performance (Enhanced)

A daily batch of re-rating should be done in 4 hours, when 30% of subscriptions are in error on a base of 25 millions chargeable items per day.

Architecture (Changed)

The rerating function is now a BART-driven process.

Integration by Default (New)

The rerating function is integrated with SAP ERP/FI-CA for *Convergent Invoicing*. Consult the first chapter about the value scenario Consume-To-Cash In High Volume in this document, page [12].

If you plan to implement this function for another scenario, consult the Integration chapter, page [33].

Convergent Charging Function

Support of New Data Model (New)

Use

The charging function of SAP Convergent Charging 3.0 supports the new data model. The account determination process is based on new objects included in each item of the provider contract: An account assignment is used to map a contract item with an account from the subscriber account.

Offline Charging: Batch Rating Session Triggering (Enhanced)

Use

SAP Convergent Charging 3.0 provides a new technical interface to trigger batch rating sessions on the provider contracts and subscriptions. See the Web Services section, page [36].

You may have to implement this interface between SAP CC and your external billing system in order to be able to manage billing cycles with up-to-date data.

NOTES

- You can manually trigger batch rating sessions from the BART Tool.
- You can implement the triggering of batch rating sessions from external systems:

- From a mediation system by using the Java libraries
- From a billing system by using the Web Services

Integration by Default (New)

The offline charging function is integrated with SAP ERP/FI-CA for *Convergent Invoicing*. Consult the first chapter about the value scenario Consume-To-Cash In High Volume in this document, page [12].

If you plan to implement this function for another scenario, consult the Integration chapter, page [33].

Activation Function

SAP Convergent Charging 3.0 manages recurring and one-shot charges and refills. For performance reasons, the calculations are only performed when necessary (for a rating and charging request). SAP CC can trigger regularly this function for the subscriptions. For the provider contracts, this function should be launched by an external system.

Technical Interface (New)

Use

SAP Convergent Charging 3.0 provides a new technical interface to trigger the activation process on the provider contracts and subscriptions. This triggers all the recurring charges and refills related to a set of provider contracts and according to a reference date. See the Web Services section, page [36].

You have to implement this interface between SAP CC and your external billing system in order to be able to manage billing cycles with up-to-date data.

NOTE

You have also to implement a scheduler in your external billing system in order to trigger regularly the activation process in SAP CC. The internal scheduler of SAP CC does not manage the provider contracts.

Integration by Default (New)

The activation function is integrated with SAP ERP/FI-CA for *Convergent Invoicing*. Consult the first chapter about the value scenario Consume-To-Cash In High Volume in this document, page [12].

If you plan to implement this function for another scenario, consult the Integration chapter, page [33].

Graphical User Interfaces

Core Tool (Changed)

Use
The Desktop Tool is renamed: The Core Tool is the key graphical user interface of SAP Convergent Charging 3.0. It is connected to the Core Server to manage the master data, audit and launch some backend functions.

New and Old Data Model Management (New)

Use
SAP Convergent Charging 3.0 provides a new data model for the master data of the service provider and for its customers. The Core Tool handles by default, only the master data based on the new data model.

The Core Tool is also able to manage simultaneously both models for upgraded landscapes.

Catalog Management (Enhanced)

Use
SAP Convergent Charging 3.0 provides the SAP users with a function to restrict the access to the objects in the catalog of the service provider.

5 Architecture

SAP Convergent Charging 3.0 provides few architecture changes to facilitate its integration with an external CRM or provisioning system and with an external billing system. These changes are introduced in this chapter.

NOTE

Most of the enhancements for the architecture of SAP Convergent Charging 3.0 are related to the integration with SAP CRM and SAP ERP/FI-CA components of the SAP Business Suite. Consult the Consume-To-Cash In High Volume section on page [12] for more information.

New Technical Interface: Web Services (New)

SAP Convergent Charging 3.0 provides a new technical interface based on SOAP technology over HTPP(S) connections.

For more information about the Web Services interface, see the Technical Interfaces page [36].

High Availability for Session Rating (Enhanced)

The session-based rating and charging function is enhanced to ensure the persistency of session data for:

- A maintenance modification of the landscape (instance map changes)
- A crash of a Rater instance of the SAP CC Core Server
- A crash of a host machine

This improves the HA concept of SAP Convergent Charging 3.0.

NOTES

- A technical service (session backup) ensures that no session is lost. It is in charge of saving the sessions out of the data cache of the Rater instance so that the cache partition can be moved to another Rater instance and that the cache values are restored after a process or a machine crashes.
- The session backup service works in transactional mode.
- The default implementation of the backup service uses the Core Database. A table is created for each partition from 1 to 480.

Performance (Enhanced)

The rerating performance has been enhanced.

Core Server: Rater Instances (Enhanced)

The Rater instances of the SAP Convergent Charging 3.0 Core Server have been enhanced with the following functions:

- Generation of refill records
- Output of alert notifications in files
- HA concept for session-based rating and charging

BART Server (Enhanced)

The SAP Convergent Charging 3.0 BART Server drives the rerating function.

6 Integration

SAP Convergent Charging 3.0 provides new features to facilitate its integration with an external CRM or provisioning system:

- A new data model for the master data
- A new concept for the use of this master data: the CRM application is responsible for bundling commercial products or offers, based on pricing elements furnished by SAP Convergent Charging: charge plans and refill plans. The CRM application is responsible for managing the order phase of this product and for creating relevant provider contracts in SAP Convergent Charging (provisioning)
- A new technical interface based on SOAP for Web Services
- Notifications in files

EXAMPLE

SAP Convergent Charging 3.0 is now integrated with SAP CRM and SAP ERP/FI-CA components of the SAP Business Suite EhP6. See the first section in this document on page [12].

Application Interfaces

External CRM & Provisioning Interface (New)

Use

SAP Convergent Charging 3.0 provides some functions to interface a CRM application or an external provisioning system in order to manage the master data stored in SAP CC or in the external system.

Technical Interface	Function	Description	Master Data
Web Services	Master Data Configuration ■ Service Provider Catalog Management	This component enables to create and maintain the relevant mapping tables in SAP CC	Mapping tables
Web Services	Master Data Configuration ■ Product and Catalog Management in CRM	This component enables the CRM application to model commercial product by combining relevant and released charge plans and refill plans stored in SAP CC	Charge plan Refill plan
Web Services	Provisioning (Customer Data Configuration) ■ Subscriber Account Management	This component enables to create and maintain the relevant subscriber account in SAP CC	Subscriber account

Web Services	Provisioning (Customer Data Configuration) ■ Provider Contract Management	This component enables to create and maintain the relevant provider contracts in SAP CC	Provider contract
JCo Function or Files	Business Processing ■ Account Balance Management	Alert notifications related to expirations of prepaid accounts and amount of the balances of a prepaid account below a threshold	Prepaid account of a subscriber accounts

For more information about the Web Services and the JCo functions, see the Technical Interfaces page [36].

Billing and Financial System Interface (New)

Use
SAP Convergent Charging 3.0 provides some functions to interface an external billing system in order to manage the billing and invoicing functions.

Prepaid / Real-Time

Technical Interface	Function	Description	Data
Web Services	Business Processing ■ Business Job Management	This component features the launch of some key business processes in SAP CC in order to enable an external billing system to compute invoices ■ Offline Charging (*) ■ Activation (*)	
Web Services	Business Processing ■ Refill Management	This component enables two paths to launch the refill process for prepaid accounts stored in SAP CC	Prepaid account of a subscriber account
JCo	BIT		Charged items, refill records, billable items
JCo Function or Files	Business Processing ■ Account Balance Management	Alert notifications related to expirations of prepaid accounts and amount of the balances of a prepaid account below a threshold	Prepaid account of a subscriber account

NOTES (*)

- The batch rating is only available for an offline charging scenario.
- For an integration mixing old data (subscriptions) and new data (provider contracts), it can be necessary to launch the activation process on both types of data.
- The load of charged items and refill records is only available in an integrated scenario with SAP ERP / FI-CA with SAP CI.

For more information about the Web Services and the JCo functions, see the Technical Interfaces page [36].

7 Technical Interfaces

Web Services

SOAP (New)

Use
SAP Convergent Charging 3.0 provides a new technical interface based on SOAP technology over HTPP(S) connections. These Web Services can be used only with the new data model introduced by this version and mostly based on charge plans and provider contracts.

Functional Area	Process Component	Technical Name
Cross Catalog (Master Data Configuration)	Service Provider Catalog Management (SAP CC Side)	`catalog`
	Product Catalog Management (CRM Side)	
Provisioning (Customer Master Data Configuration)	Subscriber Account Management	`suacProvisioning`
	Provider Contract Management	`contractProvisioning`
Business Processing	Business Job Management	`rating`
	Refill Management	`refilling`

For more information, see the Documentation chapter, page [44].

For security information, see the *Security Guide for SAP CC 3.0* from SAP Service Marketplace at: https://service.sap.com/instguidescc → *SAP CC 3.0* → *Plan* → *Security Guide*.

Process Components (New)

Use
SAP Convergent Charging 3.0 provides Web Services that includes the following process components and service operations:

Area	Process Component	Service Operations	Business Objects
Cross Catalog Master Data Configuration	Service Provider Catalog Management (SAP CC Side)	*Find mapping table classes* *Find mapping tables* *Create a mapping table* *Cancel a mapping table* *Create or change a mapping table row* *Cancel a mapping table row*	*charge plan class (*)* *refill plan class (*)* *Note: charge plan class and refill plan class are combined in an external CRM or provisioning system to model commercial offers or*

			products.
	Product Catalog Management (CRM Side)	*Find the description of a charge plan class* *Find charge plan classes* *Find the description of a refill plan class* *Find refill plan classes*	*mapping table*
Provisioning (Customer Data Configuration)	Subscriber Account Management	*Create or change a subscriber account* *Cancel a subscriber account* *Read a subscriber account* *Read the full version of a subscriber account* *Create or change an external account* *Cancel an external account* *Read an external account* *Create or change a prepaid account* *Cancel a prepaid account* *Read a prepaid account* *Change the state of a prepaid account*	*subscriber account*
	Charging Contract Management	*Create or change a contract* *Cancel a charging contract* *Find a charging contract*	*Charging Contract (Provider Contract)* *See the notes (*)*
Business Processing	Business Job Management	*Launch a rating session* *Activate charging contracts in bulk* *Activate subscriptions in bulk* *Read the status of a job* *Special: Load charged items and refill records*	
	Refill Management	*Find the prepaid accounts related to one user service identifier* *Refill a prepaid account*	

(*) NOTES

- *Charging contract* is the technical name for provider contract in SAP Convergent Charging. A provider contract is a master data of the customer of a service provider.
- A *charge plan class* is a business object related to a charge plan in SAP Convergent Charging: a charge plan class is a simplified view of a charge plan: it exposes the signature of a charge plan. Whereas a charge plan is maintained over time, the charge plan class remains stable.
- A *refill plan class* is a business object related to a refill plan in SAP Convergent Charging: a refill plan class is a simplified view of a refill plan: it exposes the signature of a refill plan. Whereas a refill plan is maintained over time, the refill plan class remains stable.

For more information, see the Documentation chapter, page [44].

For more information, see SAP Service Marketplace at: https://service.sap.com/instguidescc → *SAP CC 3.0* → *Plan* → *Technical Reference Guide*.

Technical Data Model (New)

Use

SAP Convergent Charging 3.0 provides the following technical data models for the master data of the service provider and his customers:

- Charge Plan Class
  - Represents the signature of a complete charge plan released and stored in SAP CC
  - Must be combined in a CRM application or an external provisioning system
  - Exposes information to be set on contract signature (sales order)
  - Includes information that can be redefined from CRM at contract: signature/modification, counters, parameters, expected account assignment(s), User Technical Identifier(s) expected in the related contract item
  - Contains searchable fields: ID, status, description, additional info

- Refill Plan Class
  - Represents the signature of a complete refill plan released and stored in SAP CC
  - Must be combined in a CRM application or an external provisioning system
  - Includes information that can be redefined from CRM at contract signature/modification: counters, parameters, the expected account assignment for a prepaid account, User Technical Identifier(s)
  - Exposes information to be set on contract signature (sales order)
  - Contains searchable fields: ID, status, description, additional info

- Subscriber Account
  - Includes the prepaid and external accounts that can be managed with dedicated set of service operations
  - Must be created by a CRM application or an external provisioning system
  - No credit limit balance
  - Contains searchable fields: code, subscriber, service provider, additional info.

- Charging Contract
  - Technical name for provider contract
  - Represents the charging view of a long term agreement between a provider contract and an end customer
  - Must be created by a CRM application or an external provisioning system
  - Includes complete contract items referencing a charge plan or a refill plan
  - Includes parameters with contract default values, counters (shared at contract level)

For more information, see SAP Service Marketplace at: https://service.sap.com/instguidescc30 → *Plan* → *Web Services Documentation*.

Notifications Management

Notifications in Files (Enhanced)

Use

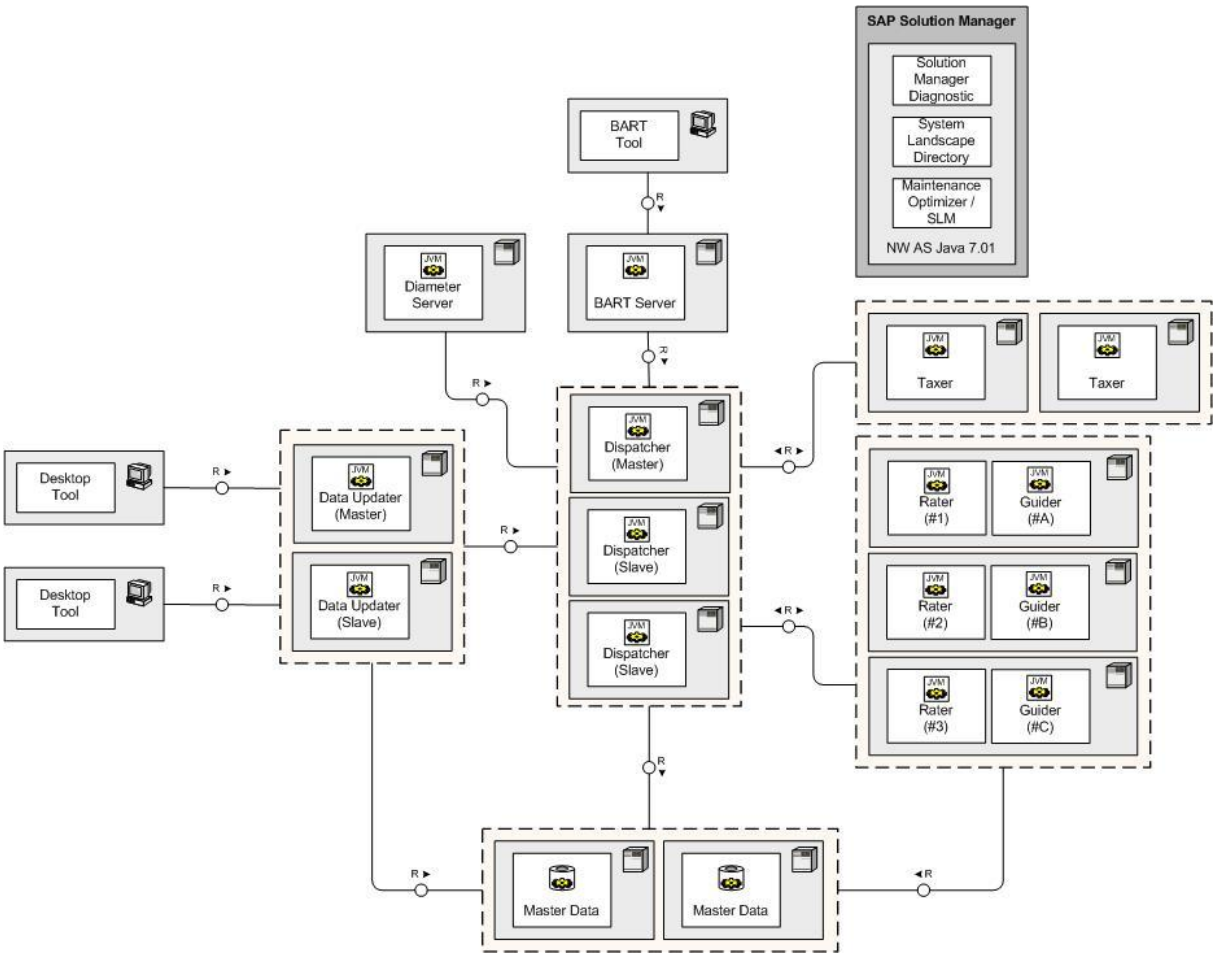
SAP Convergent Charging 3.0 provides a new function for the technical interface (Notification Management). With this function, you can store the business notifications in temporary files. These output files can then be uploaded in order to transmit the notifications to the appropriate systems or applications.

For implementation and configuration information, see the *Configuration Guide for SAP CC 3.0* from SAP Service Marketplace at: https://service.sap.com/instguidescc30 → *Install* → *Configuration Guide*.

Note: This function is implemented in the integrated scenario with SAP CRM and SAP ERP/FI-CA for *Convergent Invoicing*. Consult the first chapter about the value scenario Consume-To-Cash In High Volume in this document, page [12].

8 Technical Features

Software Architecture



New Technical Interface: Web Services (New)

Use
SAP Convergent Charging 3.0 provides a new technical interface (Web Services) for the new data model.

For more information, consult the Technical Interfaces chapter (see page [36]).

Security Management

For security information, see the *Security Guide for SAP CC 3.0* from SAP Service Marketplace at: https://service.sap.com/instguidescc30 → *Plan* → *Security Guide*.

SAP User Password Management (Enhanced)

Use
The administrator can enforce SAP Users to change their password.

Authentication credentials can be de-activated if they are not used for a configurable period (default: 45 days).

SAP User Management (Enhanced)

Use
You can restrict the access of a catalog to a group of SAP Users.

Authorization Management (Enhanced)

Use
The authorization concept of SAP Convergent Charging is based on the role concept. Two new roles are available in version 3.0:

- Process Manager
  - This role gives the possibility to use web services in order to execute business and technical operations such as subscription and/or provider contract activation, charged item bulk loading, and so on.
- Remote Support
  - This role gives read-only rights on the data and configuration of SAP CC and does not allow performing any changes.

For more information, see the *Security Guide for SAP CC 3.0* from SAP Service Marketplace at: https://service.sap.com/instguidescc → *SAP CC 3.0* → *Plan* → *Security Guide*.

Encrypted Communications for Remote Function Call

Use
The RFC communications with an SAP system can be encrypted by using SAP JCo and the SAP Cryptographic Library.

For more security information, see the *Security Guide for SAP CC 3.0* from SAP Service Marketplace at: https://service.sap.com/instguidescc30 → *Plan* → *Security Guide*.

For configuration information, see the *Configuration Guide for SAP CC 3.0* from SAP Service Marketplace at: https://service.sap.com/instguidescc30 → *Install* → *Configuration Guide*.

Tax Management

Net and Gross Amount (Enhanced)

Use
SAP Convergent Charging 3.0 provides the management of net and gross amounts. The base amount (Net, Gross) is configured in the price plan of a charge.

Customer Related Tax Information (New)

Use
SAP Convergent Charging 3.0 supports new information in the subscriber account of the new data model:

- Customer Country Code
- Business Category (B2B, B2C) VAT

Error Framework (New)

Use
SAP Convergent Charging 3.0 provides a new framework for errors that can be logged or traced in the APIs:

- An error is unique within a module
  - Errors are identified by a module name and an identifier, e.g. SQL-000123
- An error uniquely identify a section of the code
  - Errors are specific. They provide clear information about the failure and relevant arguments
- An error provides a stack of failures
  - Errors are linked one to another
  - The stack makes it easier for the calling application to understand why a process has failed
- An error includes a remedy
  - Errors include an action: a message explaining how to fix it

Platforms

You find detailed information on the availability dates, maintenance end dates and upgrade paths, as well as technical release information (DB-platforms, JSE-platforms, operating systems etc.) from the Product Availability Matrix (PAM). For precise and complete information, see SAP Service Marketplace at: https://service.sap.com/pam and use `*convergent*` as search key.

NOTE
The product availability matrix may change during the maintenance life of SAP Convergent Charging 3.0. New operating systems can be supported.

OS Platforms (Enhanced)

Use
The graphical user interfaces of SAP Convergent Charging 3.0 support now the following Operating Systems (OS):

SAP CC Software Component	MAC OS	UNIX OS

Core Tool	MAC OS X 10.6 (SNOW LEOPARD)	AIX 6.1 HP-UX 11.31/IA64 64BIT LINUX REDHAT EL5/X86_64 64BIT SOLARIS/X64 10
BART Tool		
Connector Administration Tool (IEC Tool)		
Simulation Tool		

For more information, see SAP Service Marketplace at: https://service.sap.com/pam and https://service.sap.com/platforms.

9 Documentation

Documentation for Web Services (New)

Use
A complete documentation of the Web Services for SAP Convergent Charging 3.0 is available online and offline:

Documentation	Description
Functional Documentation	This documentation provides the description of each web service (process component), the business context and use, prerequisites, integration information, constraints and integrity conditions. It details all the service operations, including error handling information. It includes the necessary links to the technical details about these service operations.
Technical Documentation	This documentation is an overview of the WSDL that is the reference for each process component. It defines the structure and the format of all the messages for all the service operations (requests and responses).

Consult the documentation of the Web Services for SAP CC 3.0 from SAP Help Portal at:
http://help.sap.com/cc → *SAP CC 3.0* → *Technical Interfaces*.

You can download this documentation from SAP Service Marketplace at:
https://service.sap.com/instguidescc → *SAP Convergent Charging* → *SAP CC 3.0* → *Plan*.

NOTE
The documentation for the Web Services of SAP Convergent Charging is also included in the Software Development Kit (SDK) of SAP CC Core Server and is available with the software DVD for download.

Accessing to the WSDL and the XSD Fragments (New)

Use
For your implementation activities, consult the functional and technical information from the documentation of the Web Services interface. For your developments, you should import in your development tool the necessary WSDL by using an appropriate URL:

Technical Reference	Description
WSDL	This information element details all the messages for all the service operations (requests and responses). It includes some references to the XSD fragments that

	define the content and the formats for these messages. You can access to the WSDL of each service using an HTTP or HTTPS connection (according to your security policy) by using the following URL: **<UPDATER_INSTANCE_HOST>:<PORT_NB>/<WS_TECH_NAME>?wsdl** Where: ■ **<UPDATER_INSTANCE_HOST>** is the DNS name or the IP address of the host machine that hosts the Updater instance of the SAP CC Core Server ■ **<PORT_NB>** is the port number dedicated to the Web Services communications on this host ■ **<WS_TECH_NAME>** is the technical identifier of the Web Service: List of the technical names: ● `catalog` (Master Data for the Service Provider Catalog and the Product Catalog) ● `suacProvisioning` (Master Data for the Customers: Subscriber Account, Prepaid Account, External Account) ● `contractProvisioning` (Master Data for the Customers: Provider Contract) ● `refilling` ● `rating` Consult the descriptions of the process components of the Web Services, page [36] for more information about the technical identifiers of this interface.
XSD	This information element details the content and the format of a message used for a service operation. You can access to the XSD fragment of a service operation using an HTTP or HTTPS connection (according to your security policy) by using the following URL: **<UPDATER_INSTANCE_HOST>:<PORT_NB>/<WS_TECH_NAME>?xsd=<N>** Where: ■ **<UPDATER_INSTANCE_HOST>** is the DNS name or the IP address of the host machine that hosts the Updater instance of the SAP CC Core Server ■ **<PORT_NB>** is the port number dedicated to the Web Services communications on this host ■ **<WS_TECH_NAME>** is the technical identifier of the Web Service: List of the technical names: ● `catalog` ● `suacProvisioning` ● `contractProvisioning` ● `refilling` ● `rating`

	■ <N> is the code number for a fragment as referenced in the WSDL or in another XSD fragment Consult the descriptions of the process components of the Web Services, page [36] for more information about the technical identifiers of this interface.

EXAMPLES

- You can access to the *Refill Management* web service (process component) with the following URL: `https://myhostname.corp:9080/refilling?wsdl`
- You can access to the `prepaidAccountRefillRequest` and the `prepaidAccountFindFromUserTechnicalIdentifierRequest` service operations with the following URL: `https://myhostname.corp:9080/refilling?xsd=3`

Prerequisites

- You have an access to the Updater instance of the SAP CC Core Server and you know its DNS name and the port number set up for the Web Services
- The Core Server is up and running

NOTE

You can view the WSDL and relevant XSD fragments by using your internet browser with the appropriate URLs that depend on the configuration of your SAP CC Core Server System.

Service Marketplace (Enhancement)

An information center is available from the SAP Service Marketplace (*).

For more information, see: https://service.sap.com/instguidescc30.

NOTE

(*) You need an authorized user ID to access this information. If you need to register for a Service Marketplace login, click here.

Online Help (Enhancement)

A documentation center is available for SAP CC on the SAP Help portal. It is accessible from the graphical user interfaces.

For more information, see: http://help.sap.com/cc → *SAP CC 3.0*.

10 Installation and Upgrade

Installation and Upgrade Tool (Enhancement)

Use
SAP Convergent Charging 3.0 is provided with an upgrade function for *SAPInst* detailed in the *Upgrade Guide*.

For more information, see: https://service.sap.com/instguidescc30 → *Upgrade* → *Upgrade Guide*.

License Management (Change)

Use
SAP Convergent Charging 3.0 supports *Global License Auditing Services*. It can generate a license auditing file from the SAP CC Core Tool.

For more information, see: http://help.sap.com/cc → *SAP CC 3.0*.

Typographic Conventions

Type Style	Description
	Arrows separating the parts of a navigation path, for example, menu options.
Example Text	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Cross-references to other documentation
Example text	Emphasized words or phrases in body text, graphic titles, and table titles
EXAMPLE TEXT	Technical names of system objects. These include report names, program names, transaction codes, table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE.
`Example text`	Output on the screen. This includes file and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
`Example text`	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
`<Example text>`	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system, for example, “Enter your **`<User name>`**”.
`EXAMPLE`	Keys on the keyboard, for example, `F2` or `ENTER`.

Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

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